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# PROCEDURE

**RFEDS LABLOAD DATA CORRECTION PROCEDURE**

**OPS-1.2**
**Revision 0**
**Date Effective: 03/20/97**
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## 1.0 Purpose:

This document outlines procedures for correcting errant electronic data that is to be stored in the Rocky Flats Environmental Database System (RFEDS).

## 2.0 Scope:

LABLOAD is the data checking routine utilized by RFEDS to check returned laboratory results against what was requested by field personnel. During this series of checks, discrepancies between expected results and actual results are identified. This procedure provides a test by test correction method for errant data that was identified during the LABLOAD process. For each test identified; the purpose of the test, test output, and a problem resolution is provided. By using this procedure, corrected data can then be successfully loaded into RFEDS.

## 3.0 Instruction:

### *Initial Upload*

#### Pre-Upload Processing

All items that have been marked with "audited" means that this correction will be included in the "Disk Upload Corrective Action Report".

All applications will be developed in the PC environment. If the ILSCII table is moved off-line then all flags used during the upload check program will be removed from the table. All codes must be created again by re-running the lab check program.

The metals test group code METCLP will conditionally be split into SMETCLP and METADD based on the tracking table. If the tracking table has MA and MB then the test group code split should occur. If MA and MB do not exist in tracking then the METCLP test group code should remain. This is done to match the GRRASP table 1.42 with bottle id MA or MG and the

GRRASP table 1.43 with the bottle id MB. The metals test group code METCLP is changed to WQPL for Cyanide. This change is audited.

The metals test group code DMETCLP is split into DMETCLP and DMETADD. If the tracking table has MA* and MB* then the test group code split should occur. If MA* and MB* do not exist in tracking then the DMETCLP test group code should remain. This is done to match the GRRASP table 1.42 with bottle id MA* and the GRRASP table 1.43 with the bottle id MB*. The metals test group code DMETCLP is changed to WQPL for Cyanide. This changed is audited.

The following casno's are being changed in ILSCII, the temporary oracle table used to QA the EDD, to standardize the use of casno's. The EPA standard casno list (EMMI) is the primary source of casno's for RFEDS. All casno's not found in EMMI or other external sources will be assigned by the RFEDS USM and approved by the lab management chemists.These changes will be audited.

| Analyte Name | old casno | new casno |
|---|---|---|
| Ammonia | 7764-41-7 | 7664-41-7 |
| Bicarbonate as CACO3 | 71-52-3 | 10-13-9 |
| Carbonate | 3812-32-6 | 10-14-0 |
| Fluoride | 10-72-0 | 16984-48-8 |
| Gross Alpha | 10-79-7 | 12587-46-1 |
| Gross Alpha | 10-78-6 | 12587-46-1 |
| Gross Alpha | 14127-62-9 | 12587-46-1 |
| Gross Beta | 10-81-1 | 12587-47-2 |
| Gross Beta | 10-80-0 | 12587-47-2 |
| MCPP | 7085-19-0 | 93-65-2 |
| Nitrite | 7632-00-0 | 14797-65-0 |
| Nitrite/Nitrate | 10-28-6 | 1-005 |
| Orthophosphate | 11-36-9 | 14265-44-2 |
| Orthophosphate | 7778-77-0 | 14265-44-2 |
| Sulfide | 7783-06-4 | 18496-25-8 |
| Uranium-238 | 7440-60-1 | 7440-61-1 |

The sequence id is added to every record in ILSCII. This will not be audited.

The field "disk_filename" will be populated with the name of the DOS filename at the time of ASCII upload and stored in ILSCII. This will not be audited.

The following fields will be left justified: project sample number, result type, test group code, parameter code, analysis lab id, unit of measure, lab batch id, lab sample number, qualifier,

result, error, detect limit, lab sample date, matrix, prep date, analysis date, blank sample no, retention time parname, and dilution factor. These changes will not be audited.

The date fields will not be defined using the date format in ILSCII. The labs consistently do not provide the correct date format and these records must be able to be loaded into ILSCII. The date fields will be converted into a date format when the upload occurs into RFEDS.

In the unit of measure field the mu symbol is changed to 'U' and '% REC' is changed to '%REC'. This change is audited.

The prep date field will be changed from 'N/A' to NULL. This change is audited.

The unit of measure, qualifier, and matrix are converted to upper case. This change is audited.

The symbol > and < will be moved from the result field to the result qualifier field if they are contained in the result field. This change is audited.

If the dilution factor alias analysis time field is a time and not an integer number then automatically populate the analysis time field. Otherwise populate the dilution factor field. This change is not audited.

When result_type = 'TIC' then change the result_type to 'UNK' and set second_result_type = 'TIC' in V_ILSCII. When result_type = 'SUR' then change the result_type to 'UNK' and set second_result_type = 'SUR' in V ILSCII. This change will be audited. All 'UNK' result types should be attempted to be automatically populated by using the lab sample number. If the lab sample number for the 'UNK' has only one distinct, valid result type other than 'UNK' then the result type should be changed to the distinct valid result type.

Remove the menu option from labload that will automatically delete the duplicate records from the analytical tables. This delete must be manual and controlled. The automatic delete is not within the data management guidelines. All duplicate records will be identified and resolved by the systematic resolution of the following reports.

All reports resolved in the order of their execution will ensure that all issues of data quality, that are currently known, will be resolved. There will be 4 reporting sections to the lab qa program. This is because of the increased sophistication of the problems being checked for in each section. If any section is skipped or corrected out of sequence, the problem resolution is much more difficult and may possible be performed incorrectly.

### *First Reporting Option*

## DUPLICATE SEQUENCE ID's IN ILSCII

Purpose: This report identifies sequence_id's in ILSCII that are duplicated. All sequence id must be unique in ILSCII. This check is mandatory.

Output: distinct sequence_id, count(*)

Report name: A45.

Problem Resolution: Research the problem and determine if the duplicate sequence id's are for the same record or do they represent different records. If they are for the same record the code for duplicating records may not be working correctly. Call the RFEDS USM. The upload will not be performed until all these problems are resolved.

## SAMPLES NOT LISTED IN SAMPLE COLLECTION

Purpose: This report identifies all missing field data from RFEDS for all records that have a result type that matched the analytical table indicator in lu_result_type. The report will only include the missing sample numbers in sample collection. These errors represent the incorrect implementation of departmental procedures. This must be resolved before update can occur. After resolution all the lab records will be able to be extracted from RFEDS.

Output: distinct lab_id, proj_sample_no, test_group_code, job_number, result_type, lab_sample_date, analysis_date, count(*)

Report name: A01.

Problem Resolution: Research the problem and obtain a copy of the COC from the labs if necessary. Check the tracking table for the COC number. If it is a data entry problem in RFEDS then correct the sample collection table and possibly the tracking table. If the lab has provided the incorrect sample number then obtain written confirmation from the lab and correct ILSCII. If the lab provided correct data that is missing from RFEDS then provide the COC to the RFEDS field process analyst for emergency input. The upload will not be performed until all these problems are resolved.

## LAB QC SAMPLES NOT LISTED IN SAMPLE COLLECTION

Purpose: This report identifies all sample numbers from the lab that do not match RFEDS. It includes all lab records that have a result type that do not match the analytical table indicator in lu_result_type. The report is used to identify potentially mis-named matrix spikes, matrix spike dups and any other lab QA sample. (For example, the lab incorrectly reported "GWOOOOIITM" instead of "GWOOOOIITMSD". Additionally, the lab reported "MSPK" or "VBLK" which clearly require no resolution.) These samples have always been reported by the labs but have never been checked before. The result type MSx and MDx will typically have RFP sample numbers that match sample collection unless the lab chemists have given the lab specific different direction. Provide this report to the lab program chemists for their approval and/or their documentation of lab non-conformance. Many of these records will not require resolution but will be included in this report. After all appropriate problem resolution the lab QA records will be able to be extracted from RFEDS.

Output: distinct lab_id, proj_sample_no, test_group_code, lab_batch_id, result_type, count(*)

Report name: A02.

Problem Resolution: Identify all sample numbers that are derivatives from RFEDS sample numbers. All of these derivative sample numbers must be researched and resolved to match the RFEDS system. All sample numbers that are not derivatives of RFEDS sample numbers do not require any resolution. The labs should have used an RFP sample for matrix spike and matrix spike duplicate samples. If the lab has provided the incorrect sample number then confirm with the lab and correct ILSCII. If the lab provided correct data that is missing from RFEDS then provide the COC to the RFEDS field process analyst for emergency input. Provide this report to the lab program chemists for their documentation. This is not a mandatory check.

## INVALID NULL IN INDICATED COLUMNS

Purpose: This report identifies all invalid NULL values on the EDD. All ILSCII records will be included in this check. RFEDS must have a valid entry for every one of these fields: proj_sample_no, parameter_code, test_group_code, result_type, lab_id, parname, lab batch id, analysis_date, disk filename and sequence id. The lab_sample_date field must be NOT NULL on all records that match the proj_sample_no field in sample collection. The disk filename field is used for internal data management and must be NOT NULL. This is a mandatory check.

Output: Provide a count of all NULL entries for each of the following fields: proj_sample_no, parameter_code, test_group_code, result_type, lab_id, parname, sample delivery group, analysis_date, lab_sample_date

Report name: A03.

Problem Resolution: Call the lab. All of these NULL fields must have a value and the lab has incorrectly left it off or mis-identified the record. Add the correct data to ILSCII. The upload will not be performed until all these problems are resolved.

## SAMPLES NOT LISTED IN TRACKING

Purpose: This report identifies all missing field data from RFEDS for all records that match a sample number in the sample collection table. The report will match on the sample number and sampling date from the tracking table. Bottle id's will not be matched at this time. These errors represent the incorrect implementation of departmental procedures. This must be resolved before update can occur. After resolution the tracking system will correctly be implemented and accurate lab discrepancy reports can be generated.

Output: distinct lab_id, proj_sample_no, test_group_code, lab_batch_id, lab_sample_date, analysis_date, count(*)

Report name: A04.

Problem Resolution: Obtain a copy of the COC from the labs. Check the tracking table for the COC number. If it is a data entry problem in RFEDS then correct the sample tracking table and possibly the sample collection table. If the lab has provided the incorrect sample number then confirm with the lab and correct ILSCII. If the lab provided correct data, that is missing from RFEDS, then provide the COC to the RFEDS field process analyst for emergency input. The upload will not be performed until all these problems are resolved.

## INVALID LAB SAMPLE NO/ PROJ SAMPLE NO COMBINATION

Purpose: This report identifies all lab sample numbers that have more than one unique proj sample number. This check will include all records on the EDD. This is a requirement of the EDD. This is not a mandatory check at this time.

Output: distinct lab_id, proj_sample_no, lab_sample_no, count(*)

Report name: A38.

Problem Resolution: All records on this report should be resolved. The lab should never use the same lab sample number on different samples. Call the lab for resolution of these discrepancies. This is not a mandatory check at this time.

## INVALID TEST GROUP CODE

Purpose: This report identifies all test group codes that are not active in the lu_bottleid table. All records in ILSCII will be included in this check.

Output: distinct lab_id, proj_sample_no, test_group_code, lab_batch_id, lab_sample_date, count(*)

Report name: A05.

Problem Resolution: Research the problem and call the lab if necessary. If the test group code was entered incorrectly by the lab, fix the ILSCII table after receiving written confirmation. If the test group is correct then check the tracking table for what may have been requested. If the tracking table does not request the delivered test group code then look at the COC. If the requested analysis can not be found notify the lab chemists and the RFEDS USM. The correct test may need to be identified and told to the lab and/or the lu_bottleid table may need to be modified. The upload will not be performed until all these problems are resolved.

## INVALID RESULT TYPE or SECONDARY RESULT TYPE

Purpose: This report identifies all result types that are not active in the lu_result_type table and all secondary result types that are not active in lu_second_result_type. All records in ILSCII will be included in this report.

Output: distinct lab_id, proj_sample_no, test_group_code, lab_batch_id, lab_sample_no,result_type, second_result_type, count(*).

Report name: A06

Problem Resolution: Call the lab. Identify what the correct result type should be and correct ILSCII. The correct result type may need to be identified and told to the lab and/or the lu_result_type table may need to be modified. The second result type will be populated when the record can be identified as a "TIC" or "SUR". Any other entry in this field is incorrect. The upload will not be performed until all these problems are resolved.

## INVALID LAB ID'S

Purpose: This report identifies all lab id's that are not active in the lu_labid table. All records in ILSCII will be included in this check.

Output: distinct lab_id, lab_batch_id, count(*)

Report name: A07.

Problem Resolution: Call the lab. Identify what the correct lab id should be and correct ILSCII. The correct lab id may need to be identified and told to the lab and/or the lu_labid table may need to be modified. The upload will not be performed until all these problems are resolved.

## INVALID CASNO

Purpose: This report identifies all casno's that are not in the chemname table with the field altnmbr = 1. All records in ILSCII will be included in this check.

Output: distinct lab_id, lab_batch_id, parameter_code, parname, test_group_code, count(*)

Report name: A08.

Problem Resolution: Research the problem and call the lab if necessary. Identify what the correct casno should be and correct ILSCII after receiving written confirmation. Typically these casno's are for surrogates. The correct casno may need to be identified and told to the lab and/or the chemname table may need to be modified. EMMI is the primary source of casno's when RFEDS does not have a match. The upload will not be performed until all these problems are resolved.

## INVALID DATES

Purpose: This report identifies all invalid date formats for the analysis_date, prep_date and lab_sample_date fields. All three of these fields will be converted to a date format for this check. NULL is an acceptab'e entry for the prep_date and lab_sample_date fields. All records in ILSCII will be included in this check.

Output: distinct proj_sample_no, lab_batch_id, analysis_date, prep_date, lab_sample_date, count(*). Include only the records with incorrect dates for any of the three date fields.

Report name: A09.

Problem Resolution: If the date is clearly understood then fix ILSCII. If the date is unclear then confirm with the lab and then fix ILSCII. The upload will not be performed until all these problems are resolved.

## INVALID MATRIX

Purpose: This report identifies all matrix that are not active in the lu_media table. All records in ILSCII will be included in this check.

Output: distinct lab_id, proj_sample_no, test_group_code, lab_batch_id, matrix, count(*)

Report name: A10.

Problem Resolution: Research the problem and call the lab if necessary. Identify what the correct matrix should be and correct ILSCII. The correct matrix may need to be identified and told to the lab and/or the lu_media table may need to be modified. The upload will not be performed until all these problems are resolved. Call the lab.

## INVALID UNIT MEASURES

Purpose: This report identifies all unit of measures that are not active in the lu unit_measure table. All records in ILSCII will be included on this check. This check does not ensure the use of an accurate unit of measure based on the reported matrix.

Output: distinct lab_id, proj_sample_no, test_group_code, lab_batch_id, unit measure, count(*)

Report name: All.

Problem Resolution: Research the problem and call the lab if necessary. Identify what the correct unit of measure should be and correct ILSCII. The correct unit of measure may need to be identified and told to the lab and/or the lu_unit_measure table may need to be modified. The upload will not be performed until all there problems are resolved.

## INVALID LAB QUALIFIER

Purpose: This report identifies all qualifiers that are not active in the lu_qualifier table. All records in ILSCII will be included in this check.

Output: distinct lab_id, proj_sample_no, test_group_code, lab_batch_id, qualifier, count(*)

Report name: A12.

Problem Resolution: Call the lab. Identify what the correct qualifier should be and correct ILSCII. The correct qualifier may need to be identified and told to the lab and/ or the lu_qualifier table may need to be modified. The upload will not be performed until all these problems are resolved.

## INVALID NUMERIC FIELDS

Purpose: This report identifies all invalid numbers in the result, error, detection limit and dilution factor fields. All records in ILSCII will be included in this check except those test group codes that have the table name = 'GEOPHYS' in LU_BOTTLE_ID.

Output: lab_id, proj_sample_no, test_group_code, lab_batch_id, result_type, parameter_code, result, error, detect_limit, dilution factor.

Report name: A13.

Problem Resolution: Call the lab. Identify what the correct numeric value should be and correct ILSCII. The upload will not be performed until all these problems are resolved.

## INVALID CASNO / PARNAME

Purpose: This report identifies problems between what the lab has called the analyte and what the casno represents in the chemname table. All records in ILSCII will be included in this check.

Output: distinct lab_id, lab_batch_id, parameter_code, parname, repname, test_group_code, count(*)

Report name: A14.

Problem Resolution: Research the problem and call the lab if necessary. Identify what the correct parname and/or casno should be and correct ILSCII after receiving written confirmation from the lab. All non analyte names should be removed from this field (ie. CLP, Dissolved, Total, ICPES, etc.) The correct values may need to be identified and told to the lab and/or the chemname table may need to be modified. These correct values can be found in the EDD appendix. At this time, the upload will be allowed if problems exist in this report.

## INVALID CASNO FOR TEST_GROUP_CODE

Purpose: This report identifies that the casno's provided for each test group code match the list of casno's in the lu_bottleid casno table. This check is very Rimple and will not match the tracking table to find the correct test group code. This report is for all records in ILSCII except where the second result type = "TIC" or "SUR". This does not include the special test group codes such as SPORG, SPMET, etc. All records on this report have not met the expected requirements of the analysis.

Output: lab_id, proj_sample_no, test_group_code, lab_batch id, casno, parname

Report name: A15.

Problem Resolution: Typically the test group code reported by the lab is wrong. The lab may also have performed a test other than the requested check. Call the lab. Identify the required corrections and fix ILSCII. If the casno is correct and does not exist in the lu_bottleid_casno table then the lu table may need to be modified. This is not a mandatory check. All records on this report however should be researched and resolved. If care is taken these issues can be permanently fixed in the RFEDS system and eliminated from this report in the future. The implications of this report are that the lab management agreement may have been changed for this test. This report is here to help RFEDS continually improve the lab QA program.

## DUPLICATE DATA WITHIN ILSCII (6 KEY CHECK)

Purpose: This report compares ILSCT records for duplicate data in 6 key fields: lab_batch_id, proj sample number, test group code, result type, lab id and parameter_code. All records in ILSCII will be included in this check. The lab_batch_id is included to exclude the lab QA blanks and spikes that are run for each batch. Without this field these records are identified duplicates.

Output: distinct lab_id, lab_batch_id,proj_sample_no, test_group_code, result_type, parameter_code, count(*)

Report name: A16.

Problem Resolution: The checks can be performed in any order. Call the lab for resolution. If all the issues on the preceding reports have been resolved then the problem will typically be with the result type or the test group. There will never be a record in RFEDS with all 6 of these key fields duplicated. The upload will not be performed until all these problems are resolved.

## DUPLICATE DATA WITHIN ILSCII (5 KEY CHECK)

Purpose: This report compares ILSCII records for duplicate data in 5 key fields: proj sample number, test group code, result type, lab id and parameter_code. It includes, all lab records that have a result type that match the analytical table indicator in lu_result_type. The 5 key uniqueness is necessary because the RFEDS analytical tables are based on having these 5 keys unique. Without this check the integrity of the RFEDS lab data will be in jeopardy.

Output: distinct lab_id,lab_batch _id, proj_sample_no, test_group_code, result_type, paramdter_code, count(*)

Report name: A41

Problem Resolution: The checks can be performed in any order. Call the lab for resolution. If all the issues on the preceding reports have been resolved then the problem will typically be with the result type or the test group. There will never be a record in the RFEDS analytical tables with all 5 of these key fields duplicated. The upload will not be performed until all these problems are resolved.

## MISSING BLANK SAMPLES BY SAMPLE DELIVERY GROUP

Purpose: This report ensures that all the blank sample numbers identified in the EDD are provided on the EDD. The proj sample number must match the blank sample number in a

minimum of 1 record on the EDD. This check will include all records in ILSCII. Each lab batch id may have 1 or more blank sample numbers identified. This is not a mandatory check. This report must be provided to the lab program chemists for them to notify the labs about the missing blank data.

Output: distinct lab_id, lab_batch_id,blank_sample_no,

Report name: A39.

Problem Resolution: The lab must provide the blank QC data with each SDG. We previously have not ensured that we receive the blank records for each SDG. Call the lab for resolution and provide the report to the lab program chemists. This test is not mandatory at this time and all the problems must be resolved.

## INVALID MATRIX /UNIT OF MEASURE COMBINATION

Purpose: This report identifies all lab matrix that do not '>I have the correct unit of measure. This check will include all records provided by the lab. The liquid matrix must have liquid units and the solid matrix must have solid units. Exceptions to the rule include: All tritium results (10028-17-8) will be reported with unit PCI/L. All TCLP test group codes (VOATCLPR, BNATCLPR, PESTTCLPR, HERBTCLPR, METTCLPR) will be reported with liquid units. All non-rad spiked samples will be reported with the unit %REC. This is a mandatory check.

Output: distinct lab_id, proj_sample_no, test_group_code, result_type, matrix, unit of measure, count(*).

Report name: A37.

Problem Resolution: All records on this report must be resolved. Call the lab for resolution of these discrepancies. This is a mandatory check.

## INVALID MEDIA /SAMPLE TYPE

Purpose: This report identifies all field data that has an incorrect sample type/ media combination. This report will check records that match the proj_sample_not sample date and bottle id in the tracking table. The sample type, and media are checked to identify the valid combination. All solid media should have solid sample type. All liquid media should have a

liquid sample type. Exceptions to the rule are outlined below. All field rinsate samples and field blanks (smpl_qc code = RNS or TB or FB) will have liquid media regardless of the sample type.

Output: distinct proj_sample_no, COC, smpl_qc_code, media, count(*)

Report name: A42.

Problem Resolution: Check with the field for confirmation of the sample type, sample qc code and the media. Identify the required change for the tracking tables and/or the COC. If the tracking tables need to be modified the change should be made in the sample collection and the tracking tables. If the COC must be corrected then field confirmation is required and lab notification is required. This is not a mandatory check at this time.

## MISSING DILUTION FACTOR

Purpose: This report identifies all validation data that has a missing or incorrect dilution factor. All LSCII data where the result type matches the analytical bible indicator in LU_RESULT_TYPE will be included in this test. Records included in the report will have a 'U' qualifier, a non-rad test group code, a quotient of the detection limit divided by result = to (1.5, 2, 5, 10, 20, 25, 50, 100, or X000) and a dilution factor that does not match the quotient. This is not a mandatory check. It may become mandatory later.

Output: distinct lab id, proj_sample_no, test_group_code, result_type, quotient, dilution factor, count(*)

Report name: A61.

Problem Resolution: Call the validator. Identify if the sample was diluted or incorrectly put into the EDD. Ensure that the record is recorded correctly in V_ XLSCII. This is not a mandatory check at this time.

***Second Reporting Option***

## ANALYTIC TESTS THAT ARE NOT IN TRACKING

Purpose: This report identifies all lab data that does not match a record in the tracking table. This report matches the lab id, proj sample no, sampling date and test group code from ILSCII with the lab id, proj sample no, initial sampling date and the matching test group code from lu_bottleid using the bottle id in tracking. This check includes all records that match the proj_sample_no field in sample collection. All records that do not match the proj_sample_no field in sample collection and that have a NULL bottle id will have the bottle id automatically set to 'QAQC' during upload. The casno will be used to identify the correct bottle id in tracking where necessary. This is a basic report that identifies if entire reported analysis can be found in tracking. This may mean that the lab has mis-identified these records or that the interface between the field and the lab did not work. This is a potential breach in the integrity of the data in RFEDS. All other problems will be reported for manual intervention. All lab data must match the tracking table.

Output: distinct lab_id, proj_sample_no, test_group_code, lab batch_id, lab_sample_date, analysis_date, count(*)

Report name: A22.

Problem Resolution: Obtain a copy of the COC from the labs. Check the tracking table for the COC number. If it is a data entry problem in RFEDS then correct the sample tracking table and possibly the sample collection table. If the lab has provided the incorrect sample number, sampling date, test group code, result type or lab id then confirm with the lab and correct ILSCII. If the lab provided correct data, that is missing from RFEDS, then provide the COC to the RFEDS field process analyst for emergency input. The upload will not be performed until all these problems are resolved.

## ANALYTIC TESTS THAT MATCH TRACKING AND SHOULD NOT BE REPORTED ON THE EDD

Purpose: This report identifies all lab data that matches a record in tracking but the tracking table indicates that this data should not be on the EDD. This report matches the lab id, proj sample no, sampling date, test group code, and bottle id from ILSCII with the lab id, proj sample no, initial sampling date, the matching test group code and the bottle id from lu_bottleid using the bottle id in tracking. This check includes all records that match the proj_sample_no field in sample collection. When a match is found the results expected field must be 'Y', the analysis_complete

field must not be a 'Y' or 'C' and the validation_complete field must not be a 'Y' or 'C'. The report indicates that the lab has mis-identified the data, that the lab has previously provided this data, or that the tracking records were previously marked as having no results expected. This is a potential breach in the integrity of the data in RFEDS. This must be resolved before update can occur. These lab records will have misleading meaning if they are not fixed.

Output: distinct lab_id, proj_sample_no, test_group_code, lab_batch_id, bottle_id, results_expected, analysis_complete, validation_complete, count(*)

Report name: A23.

Problem Resolution: If the results expected field is 'N' then check the field or lab disposition for an entry and confirm the entry. If the analysis complete or validation complete field is either a 'Y', or 'C' then check the lab or Quantalex for the reason of the duplicate data. The records may be dropped from ILSCII or the Analytical Tables depending on the researched results. If deleted from the analytical tables then make the analysis complete field "NULL" and the validation complete field "NULL". The reason used for the modification to tracking may be "RESUBMITTED / RECALCULATED" or "RESUBMITTED / REANALYZED". The tracking table may need to be corrected if one of the three fields is incorrect. The upload will not be performed until all these problems are resolved.

## ANALYTIC TESTS THAT MATCH MORE THAN ONE BOTTLE ID IN TRACKING

Purpose: This report identifies all analytic tests that match more than 1 bottle id in tracking. The QA program is not able to identify the correct bottle id for these ILSCII records. This report matches the lab id, proj sample no, sampling date and test group code from ILSCII with the lab id, proj sample no, initial sampling date and the matching test group code from lu bottleid using the bottle id in tracking. This check includes all records that match the proj_sample_no field in sample collection. All analytic tests that have one match will have the correct bottle id added to ILSCII. All analytic tests that do not have one match will be added to this report. The bottle id field will remain empty and will require manual entry.

Output: lab_id, proj_sample_no, test_group_code, lab_batch_id, result_type, parameter_code

Report name: A24.

Problem Resolution: Obtain a copy of the COC from the labs. Check the tracking table for the COC number. If it is a data entry problem in RFEDS then correct the sample tracking table and possibly the sample collection table. If the lab has provided the incorrect sample number,

sampling date, test group code, result type or lab id then confirm with the lab and correct ILSCII. If the lab has correctly provided the data on the EDD then identify the correct bottle id match, manually add the bottle id to ILSCII, and manually fix the tracking records that are duplicated. All ILSCII records that have a proj_sample_number that matches the sample collection table must have the bottle id filled for this check to be correctly completed. The upload will not be performed until all these problems are resolved.

*Third Reporting Option*

## INCOMPLETE SUITE OF ANALYTES IDENTIFIED

Purpose: All the records in this report have the bottle id field filled in ILSCII. This report identifies all the analytical tests that did not return all the expected analytes on the EDD and that could not be automatically added to ILSCII. This check does not include TIC's, SUR's or bottle id's in the lu_casno_exception table. It checks only records that have a result type that matched the analytical table indicator in lu_result_type. The result type field is not used in this check, therefore the entire suite of analytes may be found from the entire suite of result types for the proj sample number, test group code combination. The expected casno's have not been completely provided by the lab. When one distinct lab sample number result type can be found for the distinct lab id, proj sample no, and test group code all the missing casno's for this test will automatically be added to ILSCII. The following fields will be automatically duplicated: proj sample no, test group code, analysis lab id, result type, lab sample date, analysis date, matrix, bottle id, lab sample number, and dilution factor. The sequence id will be the next value, the lab disposition will be "NO RESULT" and the disk filename will be LABLOAD'. When one distinct lab sample number, result type can not be identified the missing casnos will be output in this report for manual resolution. The summary of these records will be in the lab management audit report. This is a mandatory check.

Output: lab id, proj_sample no, test_group_code, lab_batch_id, bottle_id, missing parameter_code

Report name: A64.

Problem Resolution: The only records in this report are the incomplete analysis that could not be automatically added to ILSCII. Check the tracking table for the correct key fields and check the lab record for the correct key fields. A COC may be necessary to complete the check of the key fields. At this stage of the reporting, all of the key fields should be correct. If the key fields are found to be wrong then identify the needed correction and fix RFEDS. If the correction changes the test group code, result type, proj sample number, casno or lab sample number then change the lab dispokstion to NULL and run the report again. All expected results are based on GRRASP requirements and a record in ILSCII must be added to complete the full suite of analytes. The upload will not be performed until all these problems are resolved.

## INCOMPLETE SUITE OF ANALYTES IDENTIFIED BY THE EXCEPTION PROCESS

Purpose: This report identifies all lab data that have a match in the lu_casno_exception table, that have a problem with the match and that could not be automatically added to ILSCII. All the records in this report have the bottle id field that have previously been filled in ILSCII. This check does not include the TIC's or SUR's and checks only records that have a result type that matched the analytical table indicator in lu_result_type. The expected casno's have not been completely provided by the lab. When one distinct lab sample number, result type can be found for the distinct lab id, proj sample no, and test group code all the missing casno's for this test will automatically be added to ILSCII. The following fields will be automatically duplicated: proj sample no, test group code, analysis lab id, lab batch id, result type, lab sample date, analysis date, matrix, bottle id, lab sample number, and dilution factor. The sequence id will be the rfedseq_global_nextval, the lab disposition will be "NO RESULT" and the disk filename will be 'LABLOAD'. When one distinct lab sample number, result type can not be identified the missing casnos will be output in this report for manual resolution. The records can not be marked as a complete analysis suite until the problems are resolved. This is a mandatory check.

Output: lab_id, proj_sample_no, test-group_code, lab_batch_id, bottle_id, missing parameter code

Report name: A65.

Problem Resolution: The only records in this report are the incomplete analysis that could not be automatically added to ILSCII. Check the tracking table for the correct key fields and check the lab record for the correct key fields. A COC may be necessary to complete the check of the key fields. At this stage of the reporting, all of the key fields should be correct. If the key fields are found to be wrong then identify the needed correction and fix RFEDS. If the correction changes the test group code, result type, proj sample number, casno or lab sample number then change the lab dispoistion to NULL and run the report again. All expected results are based on GRRASP requirements and a record in ILSCII must be added to complete the full suite of analytes. The upload will not be performed until all these problems are resolved.

## EXTRA ANALYTES ON EDD THAT ARE NOT EXPECTED

Purpose: This report identifies all casno's returned by the labs that do not match the list of casno's found in lu_bottleid_casno when matched to the bottle_id in ILSCII. All the records in this report will have a NULL bottle id field in ILSCII because the appropriate bottle can not be identified. This check will include all ILSCII records where the proj sample number matches the sample collection table and where all bottle id's are blank. All missing bottle id's, including where the second result types, TIC and SUR, should automatically be populated with the distinct bottle id

from the matching lab sample number. If a distinct bottle id can not be identified these records will
be printed in the report for manual resolution. The records that are not TIC or SUR will automatically be marked in ILSCII with a lab disposition of "EXTRA ANALYTE". The summary of these specific records will be in the lab management audit report. It is a requirement of the system to match every lab record with a field record in the tracking table. This extra analyte may be caused by the lab reporting more analytes than is required by GRRASP or by the lab performing additional analysis that were not found in tracking. This is a mandatory check.

Output: lab_id, proj_sample_no, test_group_code, lab_batch_id, result_type, parameter_code

Report name: A58.

Problem Resolution: At this stage of the reporting, all of the key fields should be correct. If the key fields are found to be wrong the identify the needed correction and fix RFEDS. If the lab provided correct data then contact the lab management chemists for assistance. A call to the lab may be necessary to find out why they have provided extra data to EG&G or if they performed additional analysis or why the lab sample number matches multiple bottles in tracking. All expected results are based on GRRASP requirements, therefore all extra records in ILSCII must be identified appropriately and have a matching tracking record. These records indicate that the lu_tables are not current, or that the labs are not compliant, or that the upload system has a bug, or the labs have provided incorrect data for the analysis. If the lu tables are not correct or the upload system has a bug then lab disposition field in ILSCII should be returned to NULL, the bottle id should be returned to NULL and the lu tables should be corrected. All assigned valued to TIC and SUR records will not need to be modified. All records on this report should be researched and resolved. If care is taken these issues can be permanently fixed in the RFEDS system and eliminated from this report in the future. The implications of this report are that the lab management agreement may have been changed for this analysis. This is a mandatory check. The upload will not be performed until all the extra analytes have been marked in ILSCII, all bottle id's have been marked in ILSCII and a matching record can be found in tracking.

## INCORRECT BOTTLE ID MATCH WITH TRACKING

Purpose: This report identifies all records in ILSCII that incorrectly match the tracking table. All tests performed by the lab will match a very specific suite of analytes. There is a problem with the data when the suite of field requested analytes is significantly different than the suite of analytes provided by the lab. All records in ILSCII that have a result type that matches the analytical table indicator in lu_result_type will be included in the test. Records will show up on this report when 20% of the records for an analytical test in ILSCII have been identified as "NO

RESULT" or when 20% of the records for an analytical test in ILSCII have been identified as "EXTRA ANALYTE". An analytical test is defined as the distinct lab id, proj sample number, and test group code. The calculation of the % no result is: the total number of distinct casnos where the lab disposition is "NO RESULT" for a distinct analytical test divided by the total number of distinct casnos for the same distinct analytical test. The calculation of the % extra analytes is: the total number of distinct casnos where the lab disposition is "EXTRA ANALYTE" for a distinct analytical test divided by the total number of distinct casnos for the same distinct analytical test. The multiple result types are not a factor in this check because of the distinct casno requirement. All the records on this report represent an integrity problem between the field and the lab analysis. The RFEDS interface has not worked correctly between the field and lab. This check is not mandatory.

Output: type of failure ('NO RESULT' or 'EXTRA'), lab_id, proj_sample_no, test group code, count(*) distinct casnos with lab disposition, count(*) distinct casnos for the distinct analytical test, % error

Report name: A63.

Problem Resolution: Check the COC and make sure it is correct. Check with the lab and make sure they have provided the correct data. If input mistakes were made then make any appropriate changes. If the COC is incorrect then receive confirmation from the field, have the field upload staff input the correction, and notify the lab of the correction. If everything is correct notify the RFEDS USM about all remaining records in this report. The labs do not perform tests as poorly as the records that show up on this report. The lab will closely match the analytical analysis of the EG&G request. This is not a mandatory check.

## INVALID BOTTLE ID

Purpose: This report identifies all records where the bottle id is not active in the lu_bottleid table and the bottle id does not match 'QAQC'. This check includes all records that match the proj_sample_no field in sample collection. Secondly this report identifies all records that do not match the proj_sample_no field in sample collection that do not have a bottle id of 'QAQC'. Prior to this report resolution, all records in ILSCII will have a bottle id that have either been manually or automatically placed on each record.

Output: distinct proj_sample_no,bottle id, count(*)

Report name: A28.

Problem Resolution: Check the records in ILSCII. Check the tracking table. Identify the correct bottle and fix ILSCII. The upload will not be performed until all these problems are resolved.

## DATA IN RFEDS THAT MATCH THE PROJ SAMPLE NUMBER IN ILSCII WHERE THE LAB ID IS UNKN

Purpose: This report compares ILSCII with the analytical tables to find all RFEDS lab id's of 'UNKN'. All ILSCII records where the proj sample number matches sample collection will be included in this report. The RFEDS table is identified by the result type and test group combination in ILSCII. The RFEDS records are identified by the distinct proj sample number list from ILSCII for the indicated table. A record will show up on this report when there are any 'UNKN' lab id's found in RFEDS. This is a mandatory check.

Output: proj_sample_no, test_group_code, result_type, count(*) all records, count(*) all lab id's = 'UNKN'

Report name: A48.

Problem Resolution: The analytical tables must not have any 'UNKN' lab id's. When the lab id is 'UNKN' on one of the RFEDS records confirm with Quantalex and correct the RFEDS data accordingly. If changing the lab id causes duplicate data in RFEDS then delete the duplicate. This is a mandatory check.

## DATA IN ANALYTIC TABLES (AT) WHICH IS DUPLICATED IN ILSCII, 5 KEY MATCH

Purpose: This report compares ILSCII with the Analytical tables to eliminate the upload of duplicate data into RFEDS. This report checks every record in ILSCII. A record will show up on this report when the 5 key fields (lab_id, proj_sample_no, test_group_code, result_type, and casno) match.

Output: lab_id, proj_sample_no, test_group_code, result_type, parameter_code

Report name: A30.

Problem Resolution: At this stage of the reporting, all of the key fields in ILSCII should be correct. If the key fields are found to be wrong then identify the needed correction and fix ILSCII. If the lab provided correct data then check the 5 key fields in RFEDS for correctness. If

the data in RFEDS is wrong then correct RFEDS. Identify why the lab has provided the same data to RFEDS prior to this upload. After all checks have been made and the records are still duplicate then identify the most appropriate record to drop. This can be either from ILSCII or the RFEDS tables. The record that is dropped depends on the outcome of the research, the direction from the lab and/or the direction from the lab chemists. The upload will not be performed until all these problems are resolved.

## DATA IN VAL_QA THAT IS DUPLICATED BASED ON LAB BATCH ID IN ILSCII, 6 KEY MATCH

Purpose: This report compares VAL_QA records for duplicate data in 6 key fields: lab_batch_id, proj sample number, test group code, result type, lab id and parameter_code. All records in ILSCII where the result type does not match the analytical table indicator in lu_result_type will be included in this check. The lab_batch_id is necessary to separate the batches that use the same proj sample number for the lab QA blanks and spikes . All records in VAL_QA where the lab batch id matches the distinct lab batch id's from ILSCII will be checked. This is a mandatory check.

Output: distinct lab_id, lab_batch_id, proj_sample_no, test_group_code, result_type, parameter_code, count(*)

Report name: A40.

Problem Resolution: Call the lab for resolution. If all the issues on the preceding reports have been resolved then the problem will typically be with the result type or the test group code. There will never be records in VAL_QA with all 6 of these key fields duplicated. Any of the 6 key fields can be changed if necessary to make the records unique. When legitimate duplicate records are found they may be deleted from RFEDS. This is a mandatory check.

***Fourth Reporting Option***

## INVALID VALIDATION CODE

Purpose: Every record must have a validation code of either 'Y' or 'Z'. The 'Y' indicates that Quantalex will perform validation and the 'Z' indicates that Quantalex will not perform validation. The program will automatically put the validation code into ILSCII based on the following criteria. Any records that have had the validation field manually added and that do not meet the following criteria will be output on this report. For all records that have a sample number like 'NP%', or 'VW%' and that have a NULL validation field then set validation = 'Z'. For all records that have a result type that does not match the analytical table indicator in lu_result_type and that have a NULL validation field then set validation = 'Z'. For all records that have a result type that matched the analytical table indicator in lu_result_type and that have a NULL validation field then set validation = 'Y'.

Output: distinct lab_id, proj_sample_no, test_group_code, result_type, validation, count(*)

Report name: A31.

Problem Resolution: All records on this report must be resolved or documented as to why they are exempt from the logic. This report indicates possible integrity problems with the logic of managing the lab data. The logic may need to be revised in order to meet departmental validation needs. Report all logic problems to the RFEDS USM.

## INVALID LAB DISPOSITION/ RESULT COMBINATION

Purpose: This report identifies all records that have NULL values in both the result and lab disposition field. This is incorrect. All records must have a result or an explanation of why the result is not filled. Both of these field may be filled.

Output: distinct lab_id, proj_sample_no, test_group_code, result_type, casno

Report name: A34.

Problem Resolution: All records on this report must be resolved. Identify if these records have been added by LABLOAD. If the lab provided empty results on the EDD then call the lab and identify the reason. A lab disposition must be provided. If the lab has provided these records in error then they may be deleted from ILSCII. This is a mandatory check.

## INVALID LAB DISPOSITION

Purpose: This report identifies all lab dispositions that are not active in the lu_disposition table.

Output: distinct lab_id, proj_sample_no, test_group_code, result_type, lab disposition, count(*)

Report name: A35.

Problem Resolution: All records on this report must be resolved. This is a mandatory check.

## INVALID RESULT TYPE / TEST GROUP CODE COMBINATION

Purpose: This report identifies all result types that are invalid based on the reported test group code. All records in ILSCII are included in this report. There are specific result type test group code combinations. The result types BLx, PB and PBx are correct for RAD analysis only. The PBx and~2B result types are correct for tritium analysis only (10028-17-8). The result types MB, and MBx are correct for all non-RAD analysis. The result types MS, MS2, SD, MSx and MDx are correct for organic analysis (voa, semivoa, pesticide, herbicide). The result types MS, MSD, SD, MSx, and MDx are not acceptable for inorganic analysis (metals). The result types LCx, and LCS are correct for inorganic analysis (metals). All the following historical result types (BLK, BS, BSD, SPK, BS1, BSx, Sx, SP, and S) can not specifically be checked by test group code. All records on this report must be resolved before update can occur.

Output: distinct lab_id, proj_sample_no, test_group_code, result_type, casno

Report name: A36.

Problem Resolution: Call the lab and identify the discrepancy on their reported EDD. Make the appropriate corrections to ILSCII. All records on this report must be resolved. This is a mandatory check.

## INVALID MEDIA/UNIT OF MEASURE COMBINATION

Purpose: This report identifies all lab data that has an incorrect unit of measure when compared with the media and the expected unit of measure. This report will check records that match the proj_sample_no, sample date and bottle id in the tracking table. The sample qc code, and media are checked to identify the valid type of unit of measure. All solid media will have a solid unit, and a solid matrix. All liquid media will have a liquid unit, and a liquid matrix. Exceptions to the

rule are outlined below. All non-rad spiked samples, and non-radsurrogate samples identified with the result type or second result type, will be reported with the unit %REC. All field rinsate samples and field blanks (smpl_qc_code = RNS or TB or FB) will have liquid media, a liquid unit and a liquid matrix. All tritium results (10028-17-8) will be reported with unit PCI/L regardless of media or sample qc code. All TCLP test group codes (VOATCLPR, BNATCLPR, PESTTCLPR, HERBTCLPR, METTCLPR) will be reported with liquid units and a liquid matrix regardless of media, and sample qc code.

Output: distinct lab_id, proj_sample_no, test_group_code, lab_batch_id, result_type, smpl_qc_code, media, matrix, unit of measure, count(*)

Report name: A56.

Problem Resolution: Check with the lab for confirmation ofthe proj sample number, unit of measure and the matrix. Check the tracking table for a correct sample QC code, and media. The field may need to be contacted to research incorrect sample QC codes and media, from their field notebooks. Identify the required change for V_ILSCII or the tracking tables. If the tracking tables need to be modified the change should be made in the sample collection and the tracking tables. If the COC must be corrected then field confirmation is required and lab notification is required. The upload will not be performed until all these problems are resolved.